

REMARKS

The non-final Office Action mailed November 18, 2010 has been carefully reviewed. From the Summary page, claims 1-7 were pending and rejected.

By this response, claims 1, 4 and 7 have been amended. The amendments to claim 7 are editorial in nature- the subject matter of claim 4 is referenced as the method steps. Claim 4 has been amended to more closely track with the process as it is depicted in figures 2 and 4 and the related explanatory text appearing in the specification. The advantages disclosed in the specification, e.g., on pages 6 and 14 – increased efficiencies and shorter engine development time. Claim 1 tracks with the changes to claim 4. No statutory new matter has been added. Support for the claim amendments can be found in the original specification.

Claim Rejection under 35 U.S.C. § 103(a)

Claims 1-7 stand rejected as being unpatentable over Kawai et al. (US 5,313,395) in view of Santori et al. (US 7,076,411), and further in view of Mizushina et al. (US 4,984,988). Applicants respectfully traverse.

In the present invention, the source of most of engine control signals, including those which are not to be examined and not to be changed, are supplied from a predetermined control map in an actual controller to an actual engine. Some of the control signals only, which have been examined and changed, are supplied from a virtual controller to the actual engine for evaluation. In the present invention it is possible to conduct a transition in the transition state without replacing the steady-state data and to quickly obtain the control values that satisfy performance objectives. In addition with respect to the unaltered control values, the output from the actual ECU can be used as is and it is possible to alter the control values of the ECU with good efficiency. A “brute force” approach in engine development is avoided.

Claims 1, 4 and 7 have been amended to set forth the invention with more particularity and to avoid the teachings of the applied art, whether taken alone or in combination.

It is agreed that Kawai et al. do not teach an engine simulator or for that matter a virtual ECU. Without a teaching of the simulator, it is not seen, how the steps and/or a unique combination of steps and apparatus elements with involve the simulator are fairly taught or suggested. Further, requisite unique data treatment techniques or processing would also not be taught or suggested by the primary reference.

Santori et al. is cited to remedy this. Santori et al. do teach a system for performing hardware-in-loop simulations using a plurality of graphical programs that share a single graphical user interface. The automotive applications that are provided with some detail include crash simulations and wheel traction. Consider the first paragraph in the Summary of Invention and subsequent references to automotive applications, e.g. Figure 13 and paragraphs starting at line 6 in col.27 (automobile traction wheel control unit development). The automobile engine ECU development application is an “if you wish” disclosure. See col. 20 starting at line 1. There is no detail provided as to this use. There is no disclosure of interplay of actual and virtual ECU. There is no mention of data or value selection or treatment. It appears merely to be an invitation to experiment with no guidance.

Mizushina et al. does teach a simulated engine characteristic control system. See figure 2. It does mention “map” (4) relative to a discussion of figure 1 (prior art) in the background section. It does not mention actual and virtual ECUs or their possible interplay. It does not appear to discuss steady state data or aid in the selection of control values. It would not address the deficiencies Of Kawai et al. and Santori et al., noted above, relative to the amended claims.

It is respectfully submitted that the teachings of the references, taken alone or in combination, are incomplete relative to the claims as amended. Withdrawal of the rejection is respectfully requested, especially in light of the advantages achieved and disclosed.

CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Therefore it is respectfully requested that the Examiner reconsider the presently outstanding rejection and that it be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

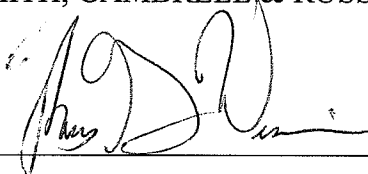
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefore are hereby authorized to be charged to **Deposit Account No. 02-4300, Attorney Docket No. 034201.006.**

Respectfully submitted,

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